

Quadjr. Expansion Chassis Installation Manual

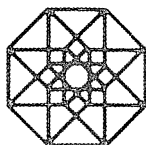


QUADRAM
An Intelligent Systems Company



Quad Jr. Expansion Chassis Installation Manual

Compiled and Written
by the Documentation Department at:



QUADRAM
An Intelligent Systems Company

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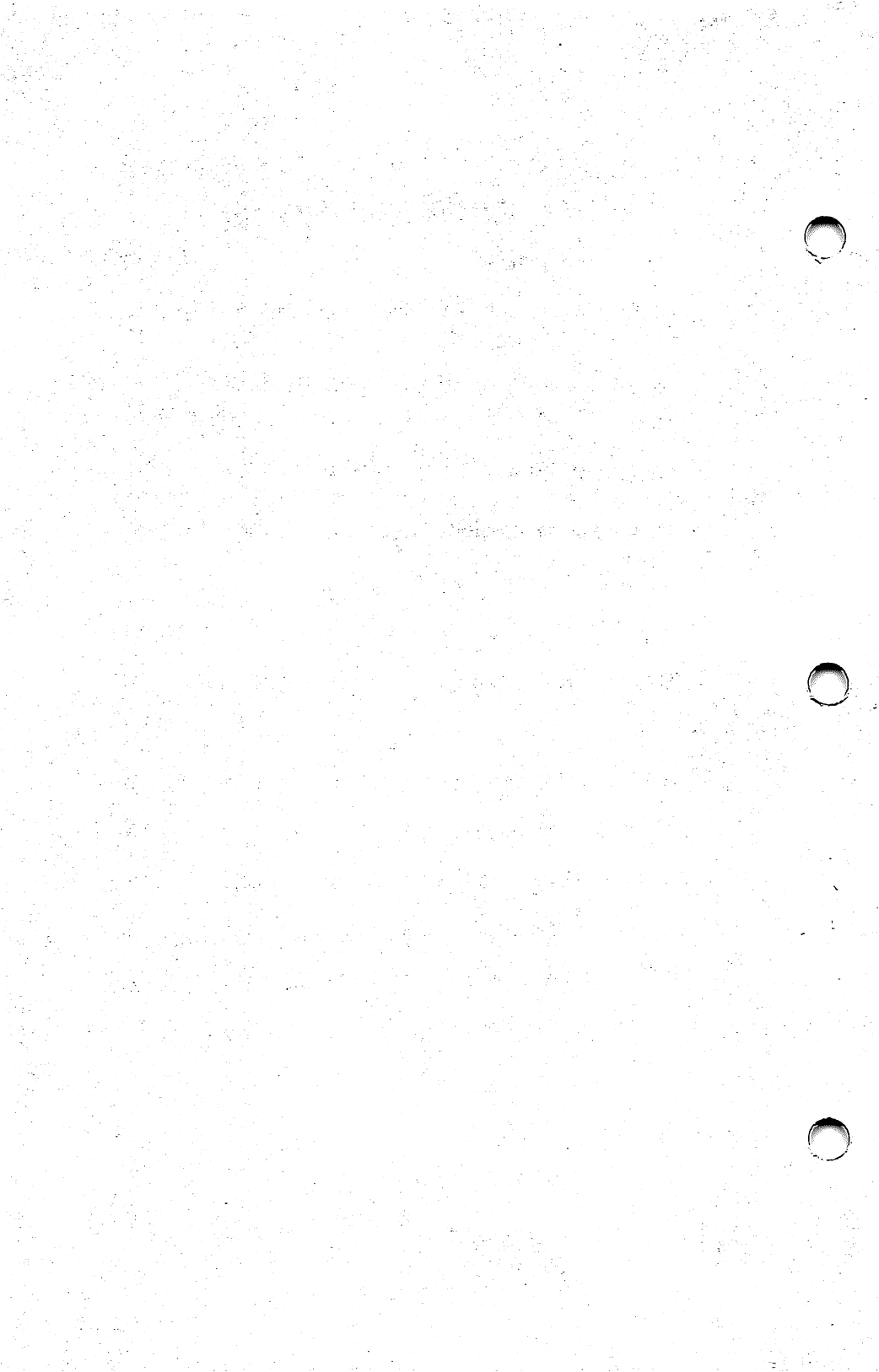
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1.0 INTRODUCTION

1.1 About Quadram

Welcome to the world of enhanced computing with the Quadjr. Expansion Chassis and optional Quadjr. Memory Board, Quadram's powerful additions to the growing family of products for the IBM PCjr. Where others leave off, Quadram continues on with a variety of features to assist the novice, amateur or serious professional to obtain the most from their IBM PCjr. computer.

As a leader in the design, manufacture and marketing of microcomputer enhancements for IBM, Apple and compatible personal computers, Quadram offers a complete line of memory expansion cards, color boards, print buffers, monochrome and color video displays, color ink jet printers and software support systems.

The craftsmanship built into all our products is called Quadram Quality. It is the result of a concerted effort by all Quadram personnel to provide you with the best microcomputer products available.

1.2 About the Quadjr. Expansion Chassis

With the Quadjr. Expansion Chassis, you now have the added capabilities to:

- Utilize a second floppy-disk drive
- Use either PCjr.-or PC-dedicated software
- Interface with parallel peripherals
- Time-stamp your files with current time and date
- Add externally-mounted expansion modules to your PCjr.

If you purchased the optional Quadjr. Memory Board, as well, you can add up to 384K of RAM to your PCjr.

While all of this may seem overwhelming at first, you'll soon find that everything will work together nicely. Just carefully follow the steps in this manual and avoid skipping ahead to unfamiliar territory.

1.3 Pre-Installation Information

Your IBM PCjr. personal computer is a fine machine and Quadram takes pride in being able to assist your efforts to utilize this important tool even more with the Quadjr. Expansion Chassis. But before proceeding further, Quadram highly recommends that you first gain a working knowledge of your PCjr. by becoming familiar with your **Guide to Operations** manual. Here, you'll find complete information on powering up ("booting"), as well as removing the computer hood, etc.

Another publication with which you should become familiar, especially if you plan on working with various cards and software, is the **Disk Operating System User's Guide** which accompanied the DOS system you purchased with your computer.

1.4 For Assistance

Everybody needs help with new equipment now and then. And Quadram prides itself on providing the best in technical support.

If you have start-up problems, we strongly urge you to first review this manual thoroughly; then, if the problem persists, contact the Authorized Quadram Dealer from which you purchased this product before proceeding further. Our dealers are familiar with our products, and they know how to best service your needs.

Should questions arise which cannot be handled at the dealer level, phone our Technical Support Department at (404) 923-6666 between the hours of 8:15 a.m. and 7 p.m. (eastern time) Monday through Friday, and until 5 p.m. Saturdays.

When you do phone, it will speed things up considerably if you have at hand: the product(s) in question; the appropriate operations manual(s); and a set of notes as to exactly what your questions/concerns are.

Note that this manual was written for users who are at least reasonably familiar with their personal

computer; therefore, we do not include here detailed engineering data and schematics. If you do have questions or require information of this sort, contact Quadram.

1.5 What You Have

Besides this operations manual, your Quadjr. Expansion Chassis box should include:

- The Quadjr. Expansion Chassis assembly itself
- Side Assembly Module
- In-line transformer with power cords
- Disk drive cable
- QuadMaster III Operations Manual
- "QuadMaster III" software diskette
- Warranty Registration Card

If you purchased the optional Quadjr. Memory Board, you should also have:

- Quadjr. Memory Board

- Adapter Card (with a plastic bus connector at one end and gold-plated edge-connector at the other)
- Warranty Registration Card

If any of these items are missing from your package, contact your Authorized Quadram Dealer immediately.



2.0 FEATURES

2.1 Second Floppy-Disk Drive

Your second floppy-diskette drive, a 360-kilobyte unit, is functionally identical to that installed in your PCjr. It is designated as Drive B when running IBM DOS programs.

You'll find it invaluable as a time-saver; no longer will you be limited to a single disk drive and have to constantly insert and remove disks to format diskettes and copy programs, as you may have experienced with the PCjr. up until now.

2.2 Parallel Port

When fully installed, your Quadjr. Expansion Chassis also provides a general-purpose I/O interface; the port utilizes a 25-pin, D-type female connector mounted to a controller card enclosed inside the Quadjr. Expansion Chassis Side Assembly Module.

While its use will probably be limited to only a nearby parallel printer, future I/O parallel devices may also utilize this port as they become available.

2.3 Clock/Calendar

You'll find your hardware-based, Quadjr. Expansion Chassis Clock/Calendar useful for keeping track of exactly when you originated or updated a file.

When installed in an autoexecution file called "AUTOEXEC.BAT," your Clock/Calendar automatically stamps your files with the current time and date. The program which enables you to set your clock/calendar is included on your diskette.

The Quadjr. Expansion Chassis Clock/Calendar is powered by an on-board lithium battery located in the Side Assembly Module.

2.4 Optional Quadjr. Memory Board

While the IBM PCjr. is a fine product in itself, it is manufactured with only 64K of RAM—suitable for limited programming work. While this can be expanded to 128K with the addition of IBM's 64K Memory and Display Expansion, even this total of 128K of RAM is easily outgrown when advanced software packages (such as Lotus 1-2-3) and special applications are utilized.

With the Quadjr. Memory Board option, plus an externally-mounted memory module, such as Quadram's own QuadMEMjr., you can increase the RAM of your IBM PCjr. to 640K—enough to accommodate virtually **any** complicated program or task.

Note that the abovementioned IBM 64K Memory and Display Expansion must be installed prior to the Quadjr. Memory Expansion Board.


2.5 Expansion Capability

Besides the above features, the Quadjr. Expansion Chassis enables you to configure even more I/O accessory modules to your PCjr. The Side Assembly Module serves as a base onto which accessory modules can be mounted, while the Expansion Chassis provides power for the modules.

Power is supplied according to the following table:

+5 VDC	1.5 amp (+ 5%)
+12 VDC	300 milliamp (+ 5%)
-6 VDC	30 milliamp (unregulated; -5.9 to -10 VDC)

Note that -6 VDC is located at pin A30 of the Side Assembly Module I/O bus connector.

Contact your Authorized Quadram Dealer or Quadram for more details about this option. 

3.0 INSTALLATION

3.1 WARNING!!

BEFORE ATTEMPTING ANY OF THE FOLLOWING PROCEDURES, TURN ALL POWER TO YOUR COMPUTER AND PERIPHERALS "OFF" AND REMOVE ALL POWER SUPPLY CABLES; FAILURE TO DO SO MAY CAUSE PERMANENT DAMAGE TO YOUR COMPUTER AND/OR QUADRAM PRODUCT AND VOID YOUR QUADRAM WARRANTY.

3.2 Expansion Chassis

Refer to chapter 4.0 at this time if you are installing the optional Quadjr. Memory Board, then return here.

With all power OFF and power cables removed:

- 1) Position the computer so that the rear panel faces you
- 2) Use your slot-head screwdriver to gently pry the rear lip of the cover up at three locations along the PCjr. rear panel
- 3) Lift the cover free of the PCjr.

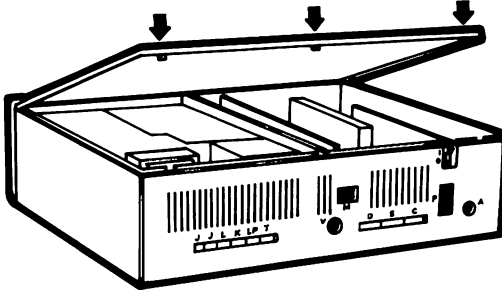


Figure 1: PCjr. cover removal

- 4) Disconnect the disk drive controller cable from both the controller card and the PCjr. disk drive, and store it should it ever be required in the future

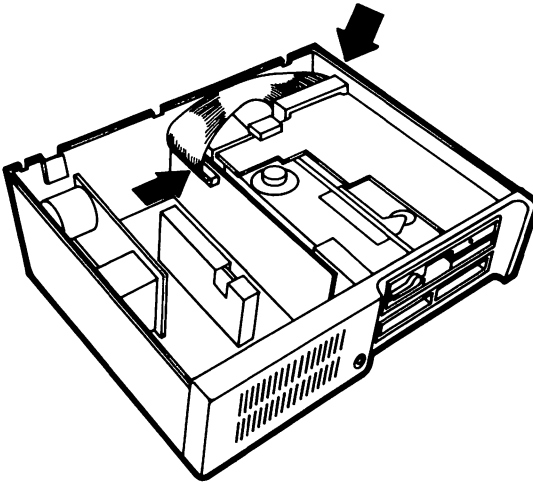


Figure 2: Disconnecting drive signal cable from PCjr. disk drive & controller card

- 5) The ribbon-type disk drive signal cable included with your Quadjr. Expansion Chassis has two plastic connectors towards one end, another connector at the opposite end and a smaller plastic connector branching off about midway down; plug the isolated end connector to the disk drive controller card

Note that the connector will only fit one way; if you cannot slide the connector on at first, rotate it 180° and try again. If it still will not fit, contact your Authorized Quadram Dealer.

- 6) Plug the in-line connector to the rear fitting of the PCjr. disk drive

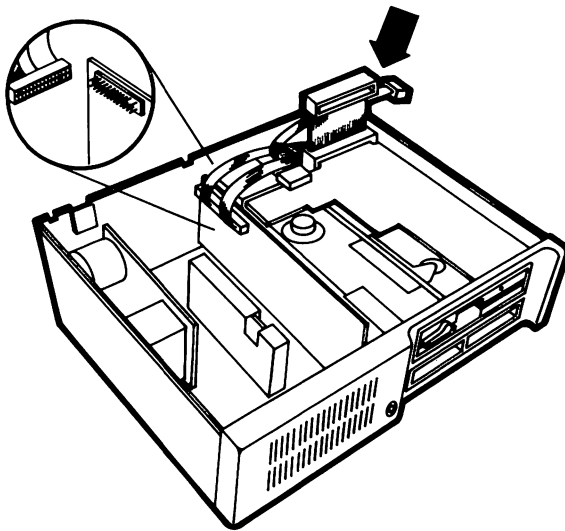


Figure 3: New signal cable connections to PCjr. disk drive & controller card

- 7) Place the Quadjr. Expansion Chassis assembly atop the PCjr., being careful to route the remaining end of the disk drive controller cable up and to the rear of the disk drive mounted inside the chassis assembly
- 8) Secure the chassis atop the PCjr. by sliding the assembly forward and pressing down until it snaps into place; be sure not to crimp or otherwise damage cables between the PCjr. case and the Quadjr. Expansion Chassis
- 9) Plug the other end connector to the rear of the disk drive in the chassis assembly

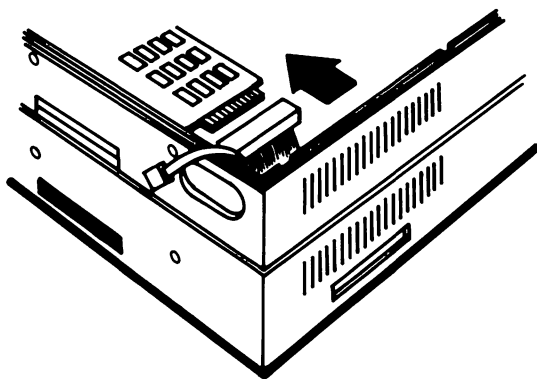


Figure 4: Securing disk drive controller cable to upper disk drive

- 10) Remove the Option Attachment Cover from the side of the PCjr. by carefully prying it free either with your fingers or the slot-head screwdriver used earlier

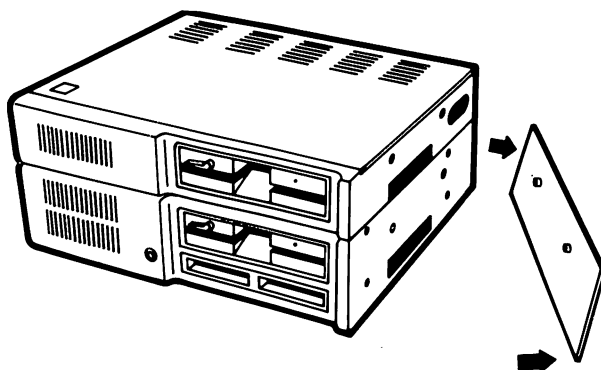


Figure 5: Removing Options Attachment Cover

3.3 Side Assembly Module — PROM Memory and I/O Jumper Shunts

Depending on your PCjr. and other peripherals, you may find it necessary to reconfigure the PROM starting memory and/or I/O address(es) of your Quadjr. Expansion package. To be certain, consult the operations manuals for your peripherals to find the memory and I/O addresses they use.

The Quadjr. package PROM memory hexadecimal address is C8000 to C8FFF; the I/O hexadecimal address is 378 to 37B. Reconfiguring the jumpers allow you to change the PROM memory base address to CC000 and the I/O base address to 358.

Should you find address reconfiguration necessary:

- 1) Use the slot-head screwdriver to pry the front and back cover halves of the Side Assembly Module apart

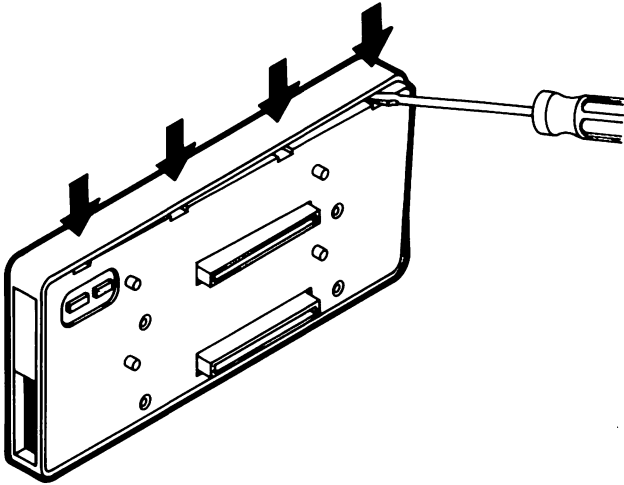


Figure 6: Opening Side Assembly Module

- 2) Carefully lift the Memory Board itself from the Module case without dislodging any of the components
- 3) With the board facing you so that the toggle switch is to the right, reposition the memory base address jumper (at the upper left corner of the board) so that the shunt covers the middle and right-hand pins; in effect, you are changing the PROM memory base address from C8000 to CC000
- 4) Next, change the base I/O address from 378 to 358 by repositioning jumper

shunt #2 (located directly below shunt #1) so that the shunt covers the middle and right-hand pins, as you did with shunt #1

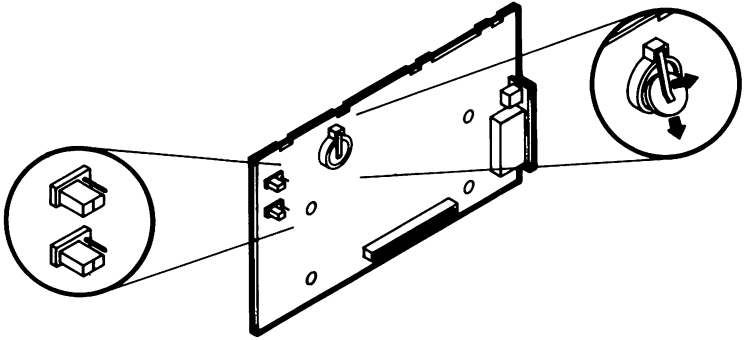


Figure 7: Jumper shunt, chronography battery details

- 5) Replace the Memory Board in the Module case — again, without dislodging any of the components
- 6) Press the case halves back together, making certain that both halves seat properly

3.4 Side Assembly Module — Mounting

- 1) Position the Side Assembly Module so that the two plastic bus connectors protruding from the module line up with similar connectors within the PCjr. and Adapter Card (if you installed the optional Quadjr. Memory Board) in the Quadjr. Expansion Chassis

- 2) Carefully press the module onto the side of the PCjr. unit so that —
 - the upper and lower plastic connectors lines up with those inside the PCjr./ Quadjr. Expansion Chassis unit
 - no damage is done to the connectors or the pins within
 - the four alignment studs on the side of the module fit into their respective holes in the PCjr. and Quadjr. Expansion Chassis shell
- 3) Using the slot-head screwdriver, tighten the four mounting screws in the module until they are **snug** — do not overtighten
- 4) Fasten the Option Attachment Cover to the lower side panel of the Side Assembly Module (alignment holes provided)
- 5) Thread the small disk drive signal cable connector through the hole in the side panel of the PCjr. Expansion Chassis where the Side Assembly Module abuts it and plug the connector onto the male fitting provided in the module
- 6) Similarly, thread the power cable from the Quadjr. Expansion Chassis towards the Side Assembly Module and plug the power cable connector onto the male fitting provided (next to the disk drive signal cable connector)

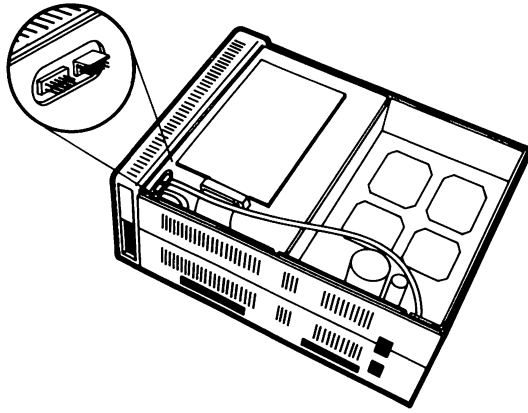


Figure 8: Small disk drive signal cable, power cable & socket details

- 7) With the rear panel of the PCjr. facing you, place the computer cover atop the Quadjr. Expansion Chassis by inserting the front lip of the cover beneath the front edge of the chassis, sliding the cover forward a bit and pressing down on the rear of the cover until it snaps into place
- 8) Remove the disk drive shipping protector from the disk drives inside the Quadjr. Expansion Chassis, re-attach your monitor and plug PCjr., Quadjr. Expansion Chassis and monitor power cords into wall outlets

4.0 QUADjr. MEMORY BOARD INSTALLATION

4.1 WARNING!!

BEFORE ATTEMPTING ANY OF THE FOLLOWING PROCEDURES, TURN ALL POWER TO YOUR COMPUTER AND PERIPHERALS "OFF" AND REMOVE ALL POWER SUPPLY CABLES; FAILURE TO DO SO MAY CAUSE PERMANENT DAMAGE TO YOUR COMPUTER AND/OR QUADRAM PRODUCT AND VOID YOUR QUADRAM WARRANTY.

4.2 Quadjr. Expansion Chassis Removal

If you have not yet installed your Quadjr. Expansion Chassis, proceed to section 4.3; if you have already installed the Chassis, start here.

With all power OFF and power cables removed:

- 1) Position the PCjr./Quadjr. unit so that the rear panel faces you
- 2) Use your slot-head screwdriver to gently pry the rear lip of the cover up at three locations along the rear panel

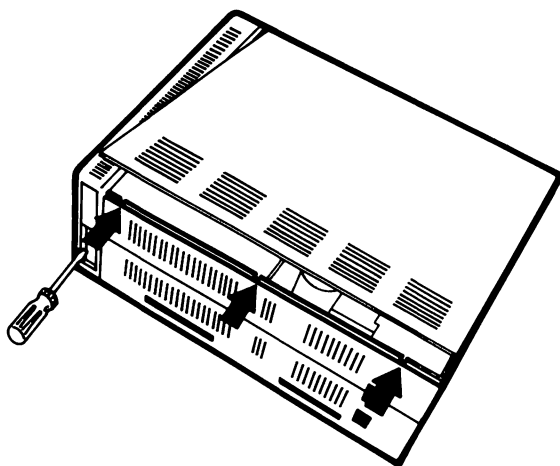


Figure 9: Cover removal

- 3) Lift the cover free
- 4) Disconnect the disk drive controller cable from the disk drive in the Quadjr. Expansion Chassis
- 5) Unplug the disk drive controller cable from its socket in the Side Assembly Module
- 6) Unplug the power cable from its socket in the Side Assembly Module

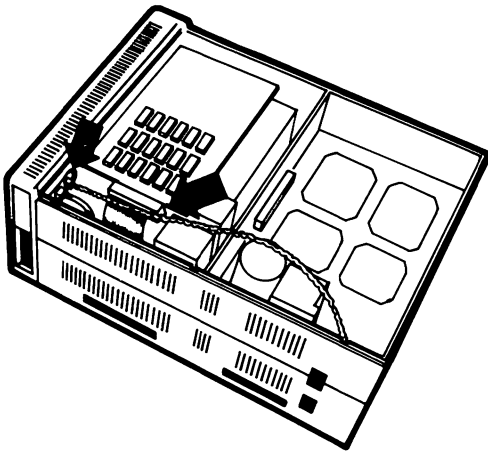


Figure 10: Disk drive & power cable removal

- 7) Remove the Option Attachment Cover from the Side Assembly Module; then remove the four screws which secure the Module to the PCjr./Quadjr. Expansion unit and pull the Module away from the PCjr./Quadjr. Expansion unit

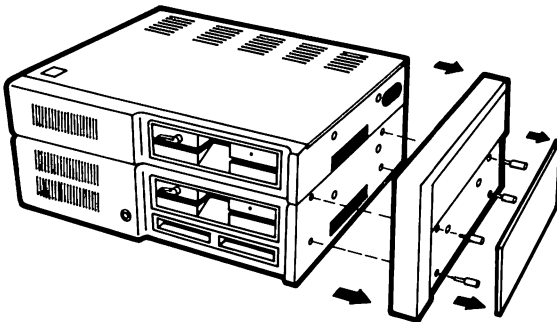


Figure 11: Side Assembly module removal

- 8) Remove the Quadjr. Expansion Chassis from the PCjr.

4.3 Quadjr. Memory Board Insertion

With the Quadjr. Expansion Chassis conveniently positioned and the cardboard disk drive protector in place inside the disk drive:

- 9) Plug the Quadjr. Memory Board and Adapter Card plastic bus connectors together so that the Adapter Card edge connector points away from the Memory Board; be careful not to bend or otherwise damage the connectors or pins inside the connectors

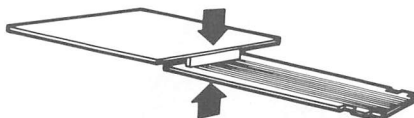


Figure 12: Memory Board & Adapter Card attachment

- 10) Insert the Memory Board/Adapter Card unit through the slot in the base of the Quadjr. Expansion Chassis; the Adapter Card should fit into a guide channel on the underside of the Chassis

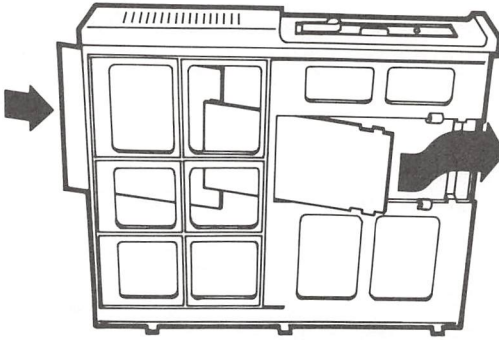


Figure 13: Memory Board/Adapter Card insertion

- 11) The Quadjr. Memory Board should be held in place at its outer edge via two plastic flanges

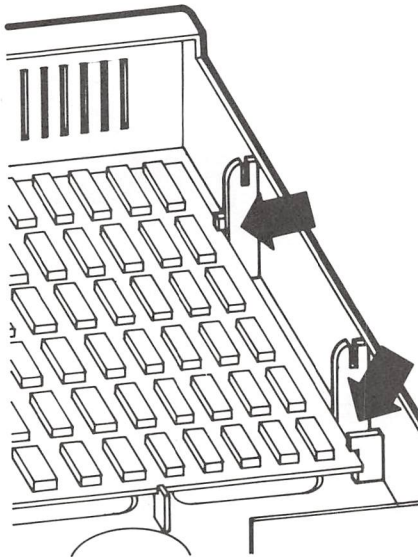


Figure 14: Memory Board secured (note flanges)

At this point, refer to chapter 3.0 of this manual for instructions on replacing the Chassis atop the PCjr.



5.0 INCREASING MEMORY

5.1 Why?

The Quadjr. Memory Card you installed has 128K of RAM, so your total system RAM should now be 256K (the Memory Card's 128K plus the 128K installed in the IBM PCjr. itself). While this doubling of available RAM space is more than enough for most applications, you may find some specialized applications where even more RAM is required.

Quadram highly recommends that only those with suitable training and experience attempt the following procedures. If you do not have suitable training, contact your Authorized Quadram Dealer.

Note that the Quadjr. Memory Board must be fully populated (to 384K) before any other memory expansion device can be added. Also, once you do fully populate the Quadjr. Memory Board **and** add yet another memory expansion device, be sure to set the starting address on that device to 512K.

5.2 How

Before you begin, make sure you have a clean, dust-free place in which to work, a flat-blade screwdriver and use only 64x1 type DRAM (Dynamic Random Access Memory) chips rated at 200 nanoseconds or faster (i.e., 150 nanoseconds); you may obtain the chips from your Authorized Quadram Dealer, or contact Quadram for more information.

With all power switched "OFF," remove the computer cover. The component side should be facing up and you should see two rows of IC chips and another four rows of open sockets. Think of the left-most column as being row #1, the one to the immediate right as #2 and so on.

Note that your new chips will have an orientation mark on top — either a semi-circular etching, a white dot or a color bar. Whatever orientation mark your chips have, make sure that it corresponds with the position of the semi-circular etching on its socket.

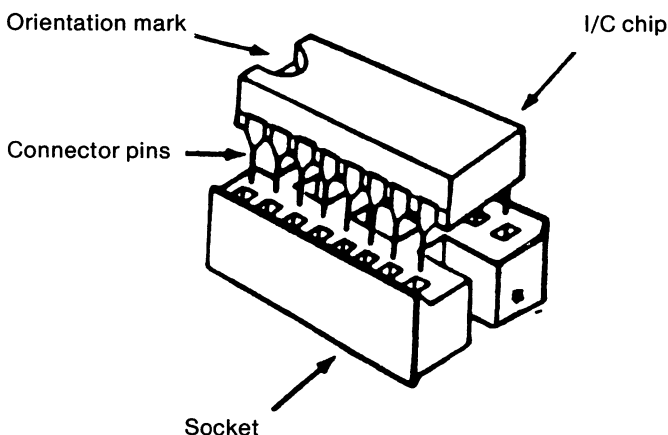


Figure 15: RAM chip and socket

You'll be increasing RAM in 64K increments by adding full rows of eight IC chips beginning with row #3; add eight chips and total RAM of the Quadjr. Memory Expansion Board will be 128K + 64K, or 192K.

Note that you must populate rows consecutively from the left and cannot skip rows. Also, before configuring any other memory expansion cards to your PCjr. (such as Quadram's own QuadMEMjr.), be sure to fully populate the Quadjr. Memory Board first.


To install a chip, line up the connector pins on the chip with the respective holes in the chip socket and press until the chip seats in place.

Afterwards, replace the cover atop the Quadjr. Expansion Chassis, reattach the power cables and powerCup.

5.3 Additional Memory Boards

With the installation of a fully populated Quadjr. Memory Board, your total system RAM should be 512K—128K in the PCjr. + 384K in the Quadjr. Memory Board.

Should your needs require even more RAM, you may attach an externally-mounted RAM card, such as Quadram's own QuadMEMjr.

Because of inherent design characteristics, however, the PCjr. will not recognize memory beyond 640K. In other words, if your system is configured as described in the first paragraph of this section, you are limited to adding no more than 128K of RAM should you opt for the externally-mounted memory card; additional RAM simply will not be utilized. 

6.0 OPERATION

6.1 PC/PCjr. Toggle Switch

The toggle switch is located just above the parallel port on the rear of the Side Assembly Module. Use it to enable your PCjr. to run PC-dedicated software or PCjr. software.

Note that the normal mode of operation will usually be the "PC" mode; the IBM Diagnostics program (described in your IBM PCjr. Operations Manual) should only be run in the PCjr. mode.

Furthermore, with the switch in the "PC" mode and more than 64K of RAM, you will see an 80-column display.

The only restriction to keep in mind is that the switch is only functional before DOS is loaded ("booted"); if you switch modes after booting, the toggle has no effect.

6.2 Parallel Port

Your Quadjr. Expansion Chassis parallel port requires no modification to operate as shipped. You do have the option of reconfiguring this port to LPT1: or LPT2: however, the procedures for which are included in your software manual.

See Appendix A of this manual for the pin-out configuration of this port.

6.3 Clock/Calendar Battery Replacement

Sooner or later, the battery which operates the clock/calendar will require replacement. At that time, simply follow earlier sections of this manual to remove and open the Side Assembly Module and lift out the circuit board from the module housing.

The disc-shaped battery should only be replaced by an exact duplicate, available from your Authorized Quadram Dealer (or contact Quadram for further information). The battery itself is held in place inside a round casing by a metal clasp.

To remove the battery, simply wedge a slot-head screwdriver under the battery and slide it out from under the clasp. Then slide a new battery into place, making sure the plus-sign (+) is on top.

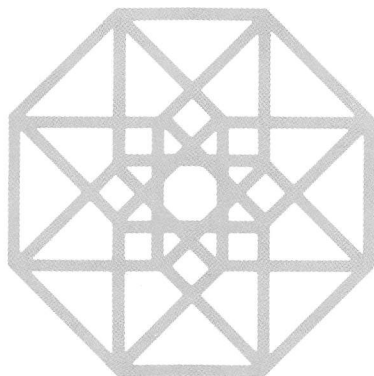
Afterwards, replace the board in the module housing, close the module and remount it to the side of the PCjr./Quadjr. unit.

6.4 QuadMaster III

The QuadMaster III Operations Manual enclosed explains how to set the clock feature of your Quadjr. Expansion Chassis as well as how to use the additional installed memory for RAM drives, print spooling and more.



7.0 APPENDIX



A. Pin-Out Configuration —

Side Assembly Module Parallel Port

Signal Name	Pin No.
Strobe	1
Data Bit 0	2
Data Bit 1	3
Data Bit 2	4
Data Bit 3	5
Data Bit 4	6
Data Bit 5	7
Data Bit 6	8
Data Bit 7	9
Acknowledge	10
Busy	11
Paper Out	12
Select	13
Auto Feed	14
Error	15
Initialize Printer	16
Select Input	17
Ground	18 - 25



B. GLOSSARY OF TERMS

Although many of the following terms do not appear in this manual, their explanations here may help in your understanding of this product as well as other computer products.

ADDRESS. The location of a data item in storage.

ALPHANUMERIC. A character set, or "font" which contains the letters of the alphabet as well as numbers and symbols of punctuation.

ASCII. Abbreviation for the American Standard Code for Information Interchange, usually pronounced "askee," which consists of seven-bit coded characters (eight bits, if parity check is included) and serves as the "universal" computer code.

ASYNCHRONOUS COMMUNICATION. Data communication in which a "start" bit preceeds and a "stop" bit follows each character; the mode of communication utilizing the serial port.

BACK-UP. A stand-by procedure or piece of equipment, usually a copy of a diskette when working with personal computers.

BASIC. Acronym for Beginners All-purpose Symbolic Instruction Code a comparatively easy-to-learn high-level programming language

BASICA. Advanced form of the BASIC language.

BATCH PROCESSING. The systematic execution of programs which have been accumulated into a group, or "batch."

BAUD. A rate of signalling speed through a communications channel, usually stated as the number of discreet signals (bauds) transmitted per second.

BIT. Short for "binary digit," and component of a "byte."

BOOT. To bring the computer/system on-line or "up"; also called "boot up"; derived from the expression to "bring one's self up from his bootstraps."

BUFFER. Short term, "volatile" storage where data is held until it can be further processed, i.e., printed to disk, paper, etc. Data held within a buffer ceases to exist when power to the system is removed.

BYTE. A grouping of usually eight bits to form a piece of information such as a letter, number or other symbol.

CATHODE RAY TUBE. The vacuum tube (television screen) used to display output of a computer system; often referred to as "VDT," or "video display terminal."

COLD BOOT. To boot by turning on the electrical power.

CONFIGURATION. Arrangement of computers, peripherals, instructions, etc.

CURSOR. A small, usually blinking, onscreen placemaker.

DATA. Facts, concepts or instructions in a format usable by computers.

DEFAULT. Automatically set values.

DOS. Acronym for Disk Operating System.

DUMP. To copy the contents of an external device, e.g., screen-dump to printer results in printout of entire onscreen display.

FLOPPY DISK. Flexible, magnetic storage disk, usually 5 and 1/4 inches in diameter when used in conjunction with microcomputers.

HARDWARE. The actual physical computer and associated peripherals.

INTEGRATED CIRCUIT (IC). An interconnected arrangement of electronic circuit elements fused together on one semiconductor chip or circuit board.

INTERFACE. To communicate through or work with.

K. Symbol for 1,024 bytes; e.g., 64K of RAM actually equals 65,536 bytes.

KILOBYTE. A unit equal to 1,024 bytes.

MENU. A display of options available to the computer operator.

MICROSECOND. One-millionth of a second.

MONITOR. Usually a VDT.

NANOSECOND. One-billionth of a second.

ON-LINE. Powered up and under control of the central processing unit.

PARALLEL PORT. An interface which sends and receives data via a ribbon cable composed of a number of parallel wires over which all data travels simultaneously.

PARITY BIT. An extra bit added to a string of binary digits in a byte to keep the number of bits either always odd or even.

PERIPHERAL. Referring to external devices which support activities of the central processing unit, or computer proper, i.e., printers, VDT's, etc.

PICOSECOND. One-trillionth of a second.

PORT. An access point for data entry or exit.

PROGRAM. A set of instructions organized and presented to a computer in such a way as to terminate in precalculated results.

PROMPT. A request to act; e.g., a computer-generated prompt to "press any key."

RANDOM ACCESS MEMORY. "Volatile," short-term memory used for storage and processing while the computer is powered up and online;

memory whose access time is independent of the location of a given data item; alternative to actual, permanent storage of data on diskettes or other media; also referred to as "RAM."

READ ONLY MEMORY. Abbreviated as "ROM;" permanent memory "burned" into semiconductor integrated circuit chip; variations include "PROM" (Programmable Read-Only Memory) and "EPROM" (Erasable Programmable Read-Only Memory).

SERIAL PORT. An interface which sends and receives data one bit at a time; alternative to parallel port.

SOFTWARE. Programs, instructions, etc. other than the hardware defined earlier.

TOGGLE. To switch from one to the other; e.g., ON or OFF, "hardfont" or "softfont," "PC mode" or "PCjr. mode," etc.



8.0 FCC COMPLIANCE STATEMENT

This equipment has been type-tested and found to comply with the limits for a Class B computing device, in accordance with the specifications in FCC rules, Part 15, Subpart J, designed to provide reasonable protection against such interference in a residential installation. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with Class B limits may be attached to this device; otherwise, interference to radio and television reception is likely to result. Quadram recommends that all peripherals be connected to this device via shielded cables with metal EMI/RFI connector hoods:

Wire type: Multi-paired, Belfoil/braid shielded;
Belden types 9806-9809 or
equivalent

Connector hood: EMI/RFI metal shield; AMP
#745173-5 or equivalent

This equipment generates and uses radio frequency energy, and if not installed and used in strict accordance with the manufacturer's instructions, may result in interference with radio and television reception. There is no guarantee that such interference will not occur in a particular installation. If this equipment does cause such interference (determined by turning the equipment off and on), you are encouraged to try to correct the condition by attempting one or more of the following measures:

- 1) Reorient the receiving antenna;
- 2) Relocate the computer with respect to the receiver;
- 3) Move the computer away from the receiver;
- 4) Plug the computer into a different outlet, so that the computer and the receiver are on different branch circuits.

If necessary, consult your Authorized Quadram Dealer. You may also find the Federal Communications Commission Booklet "How to Identify and Resolve Radio-TV Interference Problems" helpful. The booklet is stock no. 004-000-00345-4 and is available from the U.S. Government Printing Office, Washington, DC 20402.



9.0 WARRANTY PROVISIONS

Quadram warrants this product to be in good working order for a period of one year from its original date of purchase. Should this product fail to perform as described in this manual at any time during said first year of ownership, Quadram will, at its option, repair or replace it at no cost to the original owner, except as set forth in this warranty.

All warranties for this product, expressed or implied, including merchantability and fitness for a purpose, are limited to one year from date of original purchase. No warranties, expressed or implied, will apply after that period.

If this product does not perform as warranted herein, owner's sole remedy shall be repair or replacement as provided below. In no event will Quadram be liable for damages, lost revenue, lost wages, lost savings or any other incidental or consequential damages arising from purchase, use or inability to use this product, even if Quadram has been advised of the possibility of such damages.

Replacement parts or products will be furnished on an exchange basis only; any and all replaced parts and/or products become the property of Quadram.

Warranty service may be obtained by delivering this product and proof of purchase date to any Authorized Quadram Dealer or to the Quadram Factory Service Center, 4355 International Blvd., Norcross, Georgia 30093. Owner agrees to insure and accept all liability for loss of or damage to this product, to prepay all shipping charges and to use shipping container equivalent to original packaging if product is to be shipped by U.S. Postal Service or any common carrier.

No expressed or implied warranty is made for any Quadram product damaged by accident, abuse, misuse, natural or personal disaster or unauthorized modification.

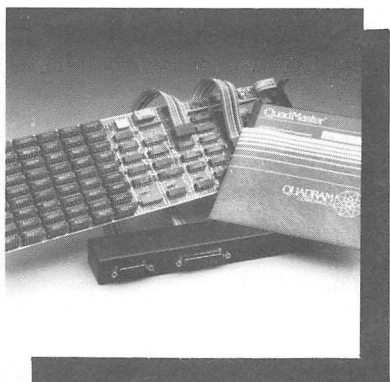


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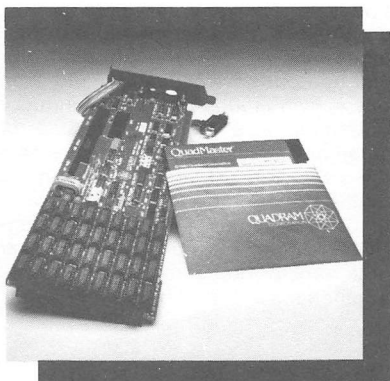
Get more out of your Personal Computer system with these other fine Quadram Products

Quadboard



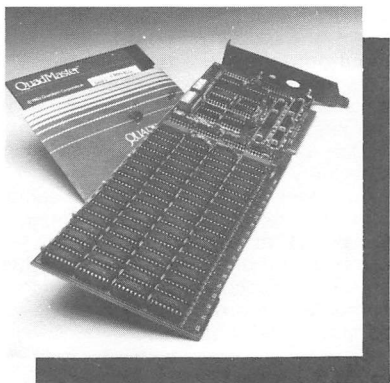
Quadram's Quadboard is a ten-function expansion board for the IBM Personal Computer. It is designed to greatly increase the PC's capabilities for minimum cost while using only one internal expansion slot. The functions provided on this one board include: Random Access Memory (RAM) expansion from 64K to 384K bytes in 64K increments, an EIA RS-232C Serial Interface for asynchronous communications, a Centronics compatible parallel interface for printer driving, a battery-powered Quartz clock/calendar to keep your PC's internal clock always on time, a game port, an expansion port connector bracket, plus complete Quadmaster II software.

Quadboard II



Quadram's Quadboard II is an all-on-one board which combines six IBM PC functions in one. This multifunction board combines two serial ports, chronograph, and memory expansion — all compatible with IBM PC hardware. The two RC-232 async ports can be used for modems, printers, and other serial devices. Memory expansion is socketed and fully expandable in 64K increments up to 256K. Full parity generation and checking are standard. Also included is complete Quadmaster II software.

Quad 512+

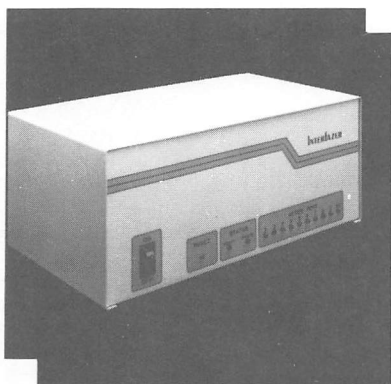


Now IBM PC owners can enjoy faster computing times and more capabilities with the Quad 512+. This board from Quadram combines memory expansion of 512K RAM in increments of 64K, 256K, or 512K with a serial port. The RS-232C async serial port uses the same chip as the IBM serial board and is used for connecting modems, printers, and other serial devices. Also included is complete Quadmaster II software.



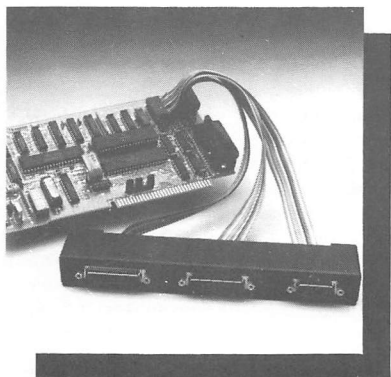
Microfazer

The Quadram Microfazer is a universal printer buffer with 8K to 512K RAM — the first with a half-megabyte! The Microfazer receives information in its memory, then sends it to the printer at an appropriate speed. The Microfazer comes with a copy feature allowing additional copies of the buffered information. The unit is sized to stack with popular modems and other peripherals; and some even plug directly into the printer!



InterFazer

The InterFazer from the Quadram Corporation is an intelligent peripheral controller/buffer designed to provide interfacing and priority control for up to eight output devices feeding and sharing one or two input devices. The inputs and outputs may be in any combination of serial or parallel. The InterFazer's state-of-the-art design allows it to function as a multi-user printer controller, an incompatible device interface, a computer I/O expander, a peripheral multiplexer, a data transfer rate converter, and an additional peripheral buffer.



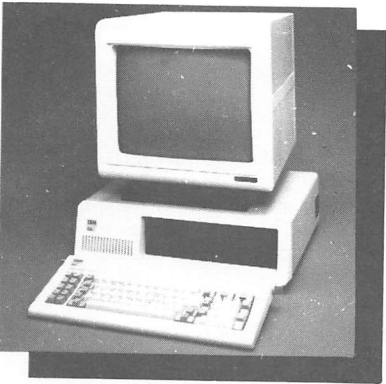
Quad I/O

Quadram's Quad I/O combines up to five of the most-needed IBM PC input/output devices onto one card. This multifunction board contains a parallel port designed to operate most printers and other parallel devices; a battery-powered chronograph — an extremely accurate real-time clock/calendar; a game port for game paddles, fire buttons, or joysticks; a serial port for connecting modems, printers, and other serial devices; plus an optional second serial port which can be ordered with the board or added at a later date.



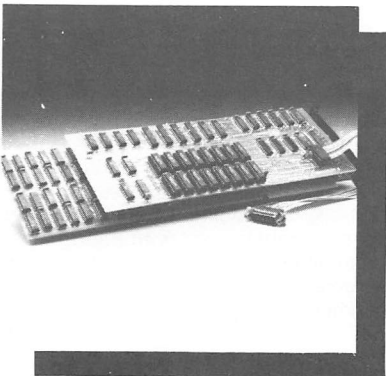
Quadchrome

This is the perfect monitor for any data processing environment — Quadchrome by Quadram. Quadchrome is a high-resolution (690 x 240) RGB color monitor designed with an NEC .31 dot pitch cathode ray tube. The high resolution makes Quadchrome perfect for word processing, spreadsheet programs, and other common business applications. But Quadchrome also has amazing color capabilities. It's able to produce up to 16 different colors on the screen at once. This makes Quadchrome perfect for color graphics work, too.



Quadscreen

Quadscreen is a high-resolution (960 x 512), bit-mapped, "big-screen" monitor for the IBM Personal Computer. The large monochrome screen can display 10,240 characters — more than five times the screen capacity of IBM's PC monitor. Dot addressability, super spreadsheet, and split-screen functions are some of the distinctive elements of Quadscreen that maximize graphics capabilities and increase word processing efficiency. Quadscreen comes with monitor, connector cable, and a video card with 128K bytes of available RAM.

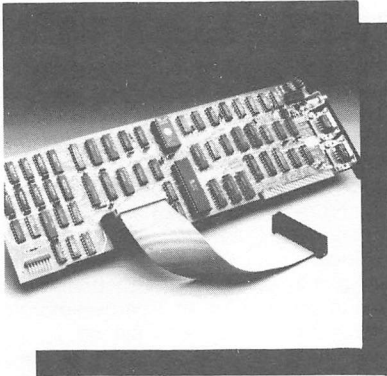


Quadcolor I and II

Quadram presents Quadcolor, the most powerful color graphics adapter package available today. Quadcolor is compatible with the Personal Computer and XT and comes in two versions.

Quadcolor I has 32K of on-board RAM for up to 16 active video pages in text mode and two complete pages in graphics mode. Plus, you get a choice of two true colors in high-resolution mode with Quadcolor I.

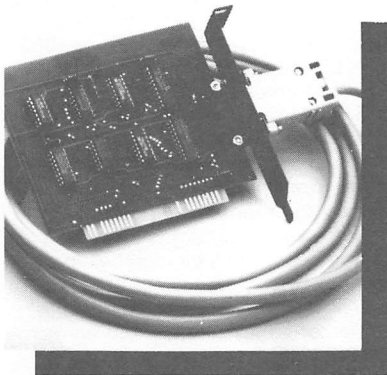
Quadcolor II gives you 96K of RAM and lets you choose from 136 different colors for high-resolution bit-mapped graphics. Quadcolor II also comes with BASICQ, an enhanced graphics software package that's powerful and easy to use.



Quadlink

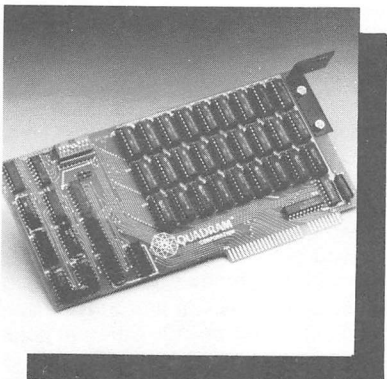
Quadram Quadlink is a revolutionary enhancement board that turns your IBM Personal Computer into an Apple-compatible system. Quadlink is an Apple-emulator that plugs into one of the PC's expansion slots. The board uses the same disk drive and I/O devices as the PC, working in complete harmony with the computer system. With Quadlink, no diskette reformatting is necessary. Just put the Apple diskette in the drive and watch it go.

Quadlink comes complete with printed circuit board and all the necessary cables for integrating the board into the system. Plus there's software for booting the Quadlink and running the Apple DOS 3.3 and thorough documentation explaining the installation and operation of the board.



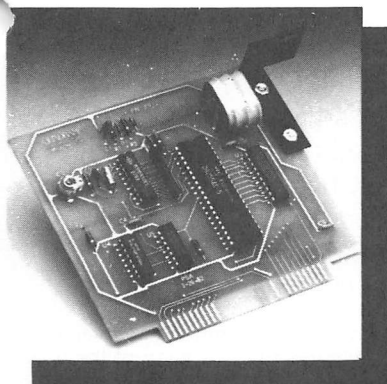
IPIC

Quadram's IPIC (IBM Parallel Interface Card) is a general purpose Centronics parallel interface card complete with cable for the IBM Personal Computer. It is specifically designed to drive printers, but may be used as an I/O driver for any parallel device that matches its input/output capabilities. The IPIC works exactly like IBM's Parallel Printer Adapter and supports the graphics function on many common graphics printers including IBM, Epson, Centronics, and others.



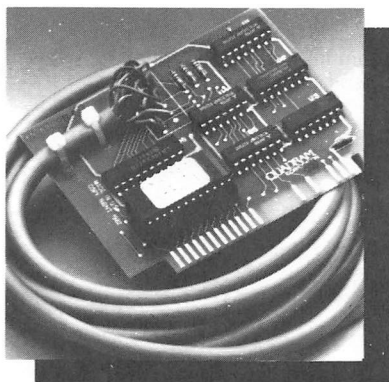
Memory Expansion Board

Perfectly compatible with other peripheral cards, Quadram's Memory Expansion Board is designed to increase the random access memory capacity of the IBM Personal Computer in 64K byte increments up to 192K. The Memory Expansion board has been manufactured with performance and reliability in mind, and has been constructed of only high-quality material and components. Each board has been burned-in and thoroughly tested to insure many years of dependable service.



Clock/Calendar

The Clock/Calendar Card from Quadram Corporation is a small plug-in unit designed for the IBM Personal Computer. It provides an accurate crystal-controlled date/time keeping function which automatically sets the IBM DOS internal clock/calendar whenever DOS is booted from a diskette. The card is powered by a self-contained battery automatically recharged by the computer, and provides continuous time keeping even when the computer is off for long periods of time.



APIC Graphics

The Apple Parallel Interface Card is manufactured by the Quadram Corporation as a Centronics compatible parallel interface for the Apple II and Apple II+ computers. The card contains a graphics option. Both Apple Graphics pages can be printed from the screen with several simple commands.

APIC-G has many text features, including adjustable margins, page length, line length, and others. APIC-G is available for several types of printers.

The Quadram Qlique (pronounced clique)

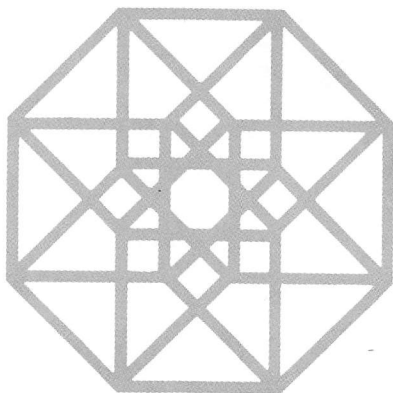
You're special to us...

As a Quadram product owner, you're very special to us. You've become a preferred customer. And as a preferred customer we want to keep you updated on what's happening at Quadram. That's why we want you in the Qlique (pronounced clique). The Quadram Qlique is a special membership of all our preferred customers. As a member in the Qlique you'll receive information on new product releases, general information about Quadram's complete line of microcomputer enhancements, plus free periodic software updates. It's a great way to "stay tuned" to what's happening at Quadram!

Joining the Qlique is easy...

It's free! All you have to do is complete the attached card and mail it back to us. We'll put you on our membership list and make sure you stay up-to-date on the exciting things going on at Quadram.

C'mon. Get in tune. Join the Qlique by sending in the card today.



ADDENDA

Section 2.3, page 6: After booting the PCjr with your DOS 2.1 system disk, replace that disk with your QuadMasterjr. disk before entering the copy command; you will be prompted to exchange disks several times in order for all files to be copied.

Section 6.4, page 14: Rather than pressing the **ALT** key and typing **HOME** to suspend printing operations (alternative to QM2 = STOP), press both the **ALT** and **HOME** keys.

Section 6.4, page 15: Delete the reference to "QM2 ALT HOME" in the third paragraph.

(This publication is Part No. 1 2-9549-04)

APPENDIX

1. The first of the two main parts of the report is a description of the work done during the period covered by the report. This is followed by a summary of the results of the work.

2. The second part of the report is a description of the work done during the period covered by the report. This is followed by a summary of the results of the work.

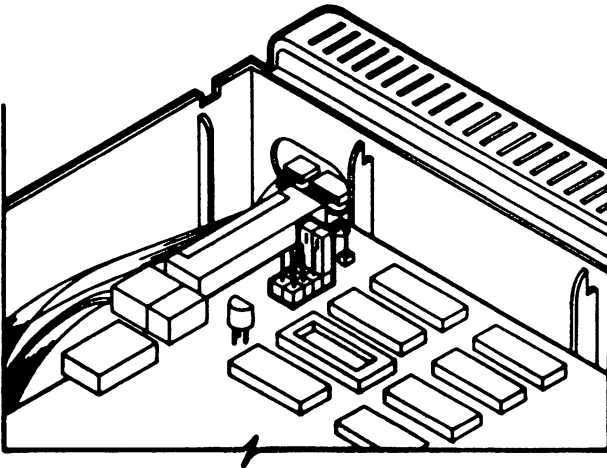
3. The third part of the report is a description of the work done during the period covered by the report. This is followed by a summary of the results of the work.

4. The fourth part of the report is a description of the work done during the period covered by the report. This is followed by a summary of the results of the work.

ADDENDA

After installation of the Quadjr Expansion Chassis, but prior to replacing the cover, note the position of the jumper shunt in front of the gold-plated edge connector on the upper disk drive.

In order for it to function as the second drive, the jumper should be located at position DS0; the lower disk drive jumper should be at position DS1.



Jumper shunt at position DS0.

(Part No. 12-9497-04)

ACCORD

It is the policy of the United States to support the people of the Republic of China in their struggle for freedom and democracy against the forces of Communism and the Chinese People's Republic.

The United States will continue to support the Republic of China in its efforts to maintain its sovereignty and territorial integrity, and to resist the aggression of the Chinese People's Republic.

The United States will continue to support the Republic of China in its efforts to maintain its sovereignty and territorial integrity, and to resist the aggression of the Chinese People's Republic.

1950-1951

Page 1 of 1

